

An Essay  
on  
Intermittent fever

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of Pennsylvania  
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But may no fogs, from lake or feney plain,  
Envelop my hills! Armstrong.

3. November the 6<sup>th</sup> 1824.



## Intermittent fever.

In the following dissertation, I propose to treat of Intermittent fever: and from its wide prevailing nature, frequent occurrence, and dilatory progress towards mortality, we may properly suppose that physicians have not been indolent in exploring its nature, in investigating its cause, and endeavouring to find out a remedy by which it may be uniformly cured. The disease itself, cannot be considered of a very dangerous character, yet other of a more serious nature may wear its livery, and excite little or no apprehension, until they become developed from under the intermittent garb, when they exhibit the most malignant and alarming aspects. Many of our autumnal fevers are ushered in with symptoms so strongly resembling agues, that fatal mistakes are occasionally met with, and hence we see the necessity of seriously deliberating what diseases are prevalent, and forbearing to apply our tonics, until the precise character of the disease is ascertained.

The disease called an Intermittent fever, occurs in distinct fits or paroxysms, with an interval of health, or a complete <sup>Silence</sup>

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sidence of the febrile symptoms between them. It is also called *an-  
 gue*, from the shivering which commences the fit: and they have  
 received different names, according to the length of time interve-  
 ning between each paroxysm. Thus when the fit recurs every day,  
 or there is an interval of twenty four <sup>hours</sup>, it is called a quotidian; when  
 every other day, or there is an interval of forty eight hours, it is  
 called a tertian; when every fourth day, or there is an interval of  
 seventy two hours, it is called a quartan. If each of these *posito-  
 gists* have made a great many subdivisions, and also have ad-  
 ded many others of longer intervals. And although we cannot  
 doubt the existence of such cases, I am inclined to believe their  
 recurrence is extremely rare, and a knowledge of them can be  
 of no real service. I shall however, to make my essay more com-  
 plete, and adhere to the custom of former writers, introduce those  
 which are said most frequently to occur.

That which is called a double tertian, is described as hav-  
 ing a paroxysm every day, with the alternate paroxysm alike.  
 Also, the double tertian, with two paroxysms every other day.  
 The triple tertian, with two paroxysms on one day, and once  
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*[Faint, illegible handwriting in cursive script, likely bleed-through from the reverse side of the page.]*

*[Faint, illegible handwriting on the right edge of the page, likely bleed-through from the reverse side.]*

the next. The double quartan, with two paroxysms on the first day, none on the second and third, and two again on the fourth. The triple quartan, with a paroxysm on the first day, another on the second, but none on the third. The triple quartan, with three paroxysms every fourth day. The triple quartan, with a paroxysm every day, every fourth day being similar.

The paroxysms of these different types have been observed to occur at particular hours of the day; as the quotidian in the morning, the tertian at noon, and the quartan in the evening. And to the generality of cases this observation may be correctly applied; yet it is by no means an invariable rule, for we find them coming on at all hours during the day, but much less frequently in the night.

As to the most common form of these agues, there is some difference of opinion. Cullen, no doubt as he observes, found in his practice the quartan to be the most frequent in its occurrence; but he seems to have had the best experienced practitioners of Europe as well as this country against him. Those of the latter party with confidence, that the tertian is the most common form, and the

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easiest of cure; while the question is least so in both these respects, and ensuing only from protracted or neglected tertians. Among those who are of this opinion, are ranked Professor Chapman and Caldwell, than whom, no higher authority could be adduced.

The course which an intermittent fever generally runs, is so well known, that to describe it, is but to repeat what has been already said by writers, who have so minutely enumerated the symptoms, that nothing new can be added. A paroxysm of this disease then, consists in a cold, a hot, and sweating stage, each of which has its distinct symptoms.

The cold stage is preceded by languor and a sense of debility, a sluggishness of motion, and some uneasiness in exerting it, with a disagreeable kind of yawning, and an irresistible propensity to stretch the limbs. At the same time there is some little nausea, the nails turn to a bluish purple, the face becomes pale, the features sink, the skin is contracted, and communicates the sensation of cold to the hands, particularly when applied to the extremities. These symptoms are soon succeeded by rigors, pains in the head, loins, and extremities; the respiration is small, frequent, and sometimes

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times labious; the pulse becomes smaller, very frequent, and often  
 irregular; the urine is almost limpid, and destitute of sediment;  
 the bowels continue unmoved; and the patient is often comatose  
 and inconvulsive, and even in some cases has a tendency to apo-  
 plexy. As these symptoms have continuance on as is true, the  
 signs become livid, and are alternated with admissions of  
 heat, which spread over the whole body, and increase in violence  
 as the sensibility slowly abates. The face is now flushed, the temples  
 throbbing, there is pain in the head, back and some of the great joints;  
 there is anxiety, restlessness, and a tendency to delirium. The pulse  
 becomes more regular, hard, and voluminous, the respiration anx-  
 ious, and the urine is rich coloured, but still without sediment.  
 The skin is relaxed, smooth, and dew during the continuance of  
 this profuse natural exudation; and the face and other parts of the body  
 not only recover their usual size, but exhibit marks of distention.  
 After this edema, heat, and largeness have continued some  
 time, a slight moisture breaks out upon the forehead, which grad-  
 ually increases over the whole body; and at last sweating be-  
 comes profuse, the heat and thirst abates, the body returns to its  
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normal temperature, the urine deposits a lactitious sediment, and most of the functions are restored to their ordinary condition.

These are the most important symptoms constituting a regular paroxysm of intermittent fever; but in some authors are mentioned others, which it is unnecessary to introduce into an essay of this kind. There are also some anomalies to be met with, and it will be well to mention particularly as they have been handed to us by the highest authorities. Cullen on l. 1. has mentioned cases in which the cold stage was entirely wanting; the same has been observed by some authors of the hot stage; and also, in some cases the hot is said to precede the cold; and it is stated by Jackson that cases occurred to him in which the fever subsided off by crine and stool, without the least degree of moisture on the skin. There is also another irregularity in an attack of this fever which I am to mention; and that is, its being sometimes located in a particular part of the body only, as in one of the limbs, and going through all the different stages of a paroxysm. Professor Chapman says he has known it seated in the eyes, which every day was attacked with pain, which would go & be relieved.

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intermittent fever was cured by the same regimen. He also relates the case of a lady who every other day was attacked by a severe pain in the lower part of the abdomen. As she came from a malarious country, and had been subject to intermittent fever, he was led to suppose that the periodical return of pain depended on some disposition of the constitution for this disease. For his resolution was directed on the same plan.

As to the cause of intermittent fever there seems to be nothing of doubt. There are few of any, but what are fully satisfied that its origin is dependent on malarious miasmata, which opinion was first promulgated early in the last century by Lancisi, an Italian writer, and has since been confirmed by all writers on this subject, and is now received as one of the best established points in medicine.

Notwithstanding the confidence with which we speak concerning the cause of this disease, and the certainty with which the subject has been investigated; we still remain dubious as to the precise circumstances under which these pestiferous exhalations are generated. It was once thought that they arose entirely from a decay and





and vegetable putrefaction, which by the influence of a powerful sun, was continually going on in marshes, pools, and lakes; and since we generally find agues prevailing in such portions of the country. Recently, however, it has been maintained by Bro. Lee, a distinguished writer on this subject, that neither aqueous nor vegetable putrefaction was the cause of marsh fevers; but that "the only condition indispensable to its production is paucity of water, when it has recently abounded, and that it is incident to the last or very advanced stage of the disease process." It is according to him, from the saturated, and drying margins of lakes, pools, and marshes, that it emanates, and not from the water they contain, which it is requisite should be absorbed into the earth, and entirely removed to the eye before it can produce any pernicious effects. The facts he adduces in support of this opinion are numerous and conclusive; yet we have evidence on the other side sufficiently strong to demand our most serious attention, and thus rendering it hardly safe in the present state of our knowledge to come to any positive conclusion.

It has also been a subject of much inquiry, what the real  
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nature of these malarial vapors, or to what we could attribute their poisonous character. Some have said it was owing to azote, hydrogen, carburetted hydrogen, &c. — but from experiments which were instituted for the purpose of ascertaining the cause of their deleterious effects, we are taught that it has been erroneously imputed to these activities. To expose our ignorance upon this subject, and to show how little we yet know concerning their chemical nature, I will quote the result of some experiments which have been recently repeated by Professor Julia of Lyons, with much care and precision.

We conclude,

First— That the nature of these exhalations is wholly unknown, but there is every reason to believe their deleterious effects is owing to a portion of putrefied animal or vegetable matter, deposited and retained by gas."

Second— "That the air of marshes does not differ from atmosphere in any principle of which chemical analysis can show the existence?"

Third— "That none of the gases disengaged from bodies in a state of putrefaction, exhibit themselves in a somewhat volatile?"

Scarcely.



Fourth - "That it is an error to attribute the disorder ~~and~~ to be  
 manifest in the putrefaction of azote, is contained by ~~the~~ *gen. of*  
*ammonia*," 20.

Fifth - "That these matters, when in a sheer state, coalesce only  
 immediately with azote, as gases not ~~in~~ *in* soluble, and generate no permanent  
 disorder - a solution, which time and disposal in an impure, little  
 quantity, then in the atmosphere, is, we think that nature  
 can be imputed to them."

De Lisle has also made experiments with a view to shed further  
 light upon this subject, the result of which are as follows.

First - "That mensural papers make gravity that they never arise in  
 the atmosphere, unless aided by a lighter body, by which they are car-  
 ried into it."

Second - "That they have no perceptible smell, and may be separa-  
 rated from odours with which they accidentally become associated."

Third - "That it is aqueous vapour which holds them suspended  
 in the atmosphere."

Fourth - "That various obstacles form barriers which they cannot  
 pass, and against which they are deposited."



some of these results have been confirmed by facts long observed, as for instance we have long known that miasmata may be carried by the wind - but as relates to the distance at which they may be transmitted in such a condition as to excite their ordinary effects, much difference of sentiment prevails. We are however infinitely warranted in supposing that they may be wafted to the distance of 8 or 10 miles, as we not unfrequently see diseases known to be produced by them, occur in situations thus remote from the source of exhalation.

It has likewise been known that trees, water, &c. form barriers, by which their passage is prevented, and thus it has been customary to plant rows of trees between dwellings, and places known to be favourable to the production of miasmatic poison. Bancroft has observed that a vessel may lie within a quarter of a mile of the most sickly shores, without endangering in the slightest degree the health of the crew: and in support of this conclusion he has adduced the most authentic testimony. This evidently shows that water forms an impediment to the passage of these poisonous vapours, which it does proba-





On by absorbing them when the matter is serious.

But is the effect of miasmata in generating intermittent fever, there are other causes which are known to contribute to typhoid fever, as fatigue, mental anxiety, meagre diet, excessive coactions, also colds, especially if combined with moisture, as wet clothes, exposure to cold, draughts, rooms, beds, &c. — but these acts be considered rather as exciting than remote causes. Some have believed it to be communicated by contagion, but this is by no means consistent with general observation.

After dwelling thus long on the nature and cause of intermittents, I shall proceed to treat down the treatment; and in doing this, I will merely give a summary of what seems at present to be most generally effectual.

The treatment of miasmata divides itself into two distinct parts; that during the paroxysm, and that during the interval or apyrexia.

In the treatment of a paroxysm we are to imitate nature, differing from her only, by hastening, if possible, her progress. Thus during the cold stage, it is our duty to endeavour to induce  
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the hot; and when the hot stage comes on, to excite by proper means the secretion by the skin; or in other words, it is our object during the paroxysm to induce perspiration which terminates it.

In the first approach to an ague paroxysm, we put the patient immediately into a warm bed, and apply topical applications, as bottles filled with warm water, hot bricks, &c. to his abdomen and extremities; and assist their diaphoretic effects by warm diluent drinks, such as the herb tea, and if necessary even to wine when the cold stage is very violent, and dangerous consequences seem likely to follow, the best remedy is an emetic, which not infrequently affords relief during its operation. Being however, always an unpleasant remedy, it should not be prescribed only in particular cases.

The application of tourniquets to the limbs have been strongly recommended by Mr. Hillie with a view to check the cold fit of agues. From the observations which he made he deduces the following conclusions. First. That at any time during the cold fit of an intermittent, if tourniquets be applied so as to obstruct the circulation in two of the extremities,  
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in three minutes thereafter the hot stage will be induced. Seem that if the tenniquely be applied previous to the accession of the paroxysm, the cold stage will be entirely prevented. Think that when the cold stage of an ague is either thus shortened or prevented, the following hot stage is rendered both milder and shorter. Whether this is of any positive advantage in arresting the cold fit, I will not attempt at present to decide, but Professor Chapman says he has seen it tried in the hospitals at Edinburgh, without any benefit whatever.

Opium is a remedy much employed in the cold fit, and was originally introduced by Dr. Trotter, who gave it in the form of Laudanum, gr. xxx. of which was generally sufficient to arrest the paroxysm. This practice is sanctioned by the most experienced practitioners: sometimes however, it may be necessary to give it in much larger doses than that recommended by Dr. Trotter.

If death takes place in the cold stage, which is rarely the case, it is owing to congestion, or an unusual accumulation of blood in the internal parts.

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The third thing to be done in the hot fit is to give a  
 plentiful drink during the course of the fever, and to con-  
 sider in the end of the fit, when the patient is in a state of  
 profuse perspiration, and in a state of prostration. The proper mode of accom-  
 plishing the former object, provided bile is the cause of such  
 irritation, is the exhibition of an emetic, which in many cases  
 the stomach, its own contents, and also the bowels, are disposed to  
 move its own contents, and co-operate in the action. If some-  
 thing comes on, however, nothing more is required than to give  
 the patient freely of warm beverages, as warm tea, water, &c., which  
 only has the effect of facilitating the operation. If vomiting should  
 continue after sufficient evacuations have been procured, it may  
 be requisite to give a little tritacum or rhubarb to calm the irrita-  
 tion to the stomach.

To fulfil the second indication in the hot fit, we depend prin-  
 cipally on those medicines which promote perspiration; and for that  
 purpose most practitioners of this country employ the Salta &  
 metis in small doses; while the European physicians are very  
 much in the habit of using the same powder, an article known

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to resemble very much in its composition and diaphoretic  
 virtue the pulvis Antimonialis of the dispensatory. Beside Manget  
 has other articles which seem to enjoy very excellent powers in  
 promoting diaphoresis, as the Eupatorium Perfoliatum, and  
 Spiritus Rindereri. The former of these is a native plant growing  
 in meadows and low grounds, well known to the country people  
 by the titles of Trough wort, Indian sage, and especially Tom-  
 st. With a view of obtaining its diaphoretic effects, it is given in  
 warm infusion. The Spiritus Rindereri is also a medicine well su-  
 ited to the last stage of cutaneous eruptions, not only with freckles  
 and eruptions, but is retained on the stomach when others are re-  
 jected, and in this account well resorted to with very great ad-  
 vantage.

Opium has been strenuously recommended in the last fit by  
 the practitioners of warm climates, and particularly by Dr. Syden-  
 ham, who after amiable experience with it declares, that it speedily exerts  
 its diaphoretic, hastens the solution of the puerperium, and is the best  
 preparative for the abolition of the bark. Good signs, those cases  
 which he treated in this way were never followed by jaundice,  
 &c.

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deley, &c. Sometime elapsed before the practitioners of this country could consent to follow the practice of Dr Lind, but after trying the remedy faithfully, they found it was well suited to those cases where no inflammatory symptoms existed; and prescribed under such circumstances, it is now generally admitted to be extremely useful.

Before concluding my observations on the treatment of the hot stage, I must point out briefly, the plan to be pursued when the disease partakes of a more inflammatory type, which is more apt to be the case in the spring of the year, owing in all probability to the weather being cooler and more changeable, under which circumstances the inflammatory diathesis has a greater tendency to prevail. In cases of this nature when there is pain in the head, a flushed countenance, obstinate delirium or dyspnoea, with a strong, full and hard pulse, the lancet is to be employed, the alimentary canal to be evacuated, by emetics or mercurial purges; and afterwards we may use with great advantage some mild diaphoretic, as the spiritus Mindereri, or antimonial wine in combination with the sweet spirits of V. M.

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In the sweating stage we have but little to attend to, but avoid whatever has a ten dency to check the discharge, and if much debility <sup>be</sup> present, to administer some gentle cordial.

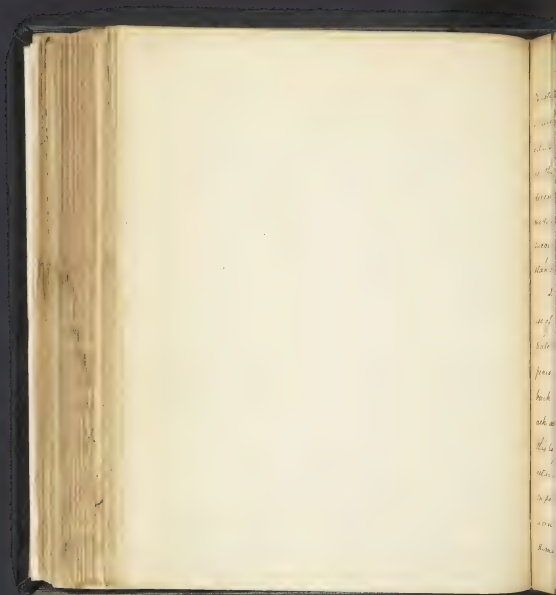
If an intermittent assume the typhoid character, the prognosis is to be treated by cordials, stimulating diaphoretics, and all the means which tend to support and improve the tone of the system.

I am next to speak of the treatment during the interval or apyrexia. And among all the remedies which have been tried in the cure of intermittents, none has received half the encomiums, or been so universally commended as the Peruvian bark. The attention of the Europeans was first drawn to it by Cinchon, the Spanish countess, being cured of an obstinate intermittent by it in 1638: and a few years afterwards, a quantity of it was introduced into Italy and distributed over a great part of Europe at a high price by the Jesuits, from which circumstance it acquired the name of Jesuits bark, (*Julvispatum*), from this time it came into general use, and was esteemed as a sovereign remedy for this disease; but by some means it fell into discredit, and many years elapsed before it was restored by Talbot, since which,  
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it has preserved an univocal reputation, amidst the many and diversified opinions which have been entertained concerning it.

As to the proper time at which this remedy ought to be administered, not a little difference of sentiment has prevailed. It was contended by some, that the bark should not be given until the fever had run through several paroxysms, so that putrid influence might be expelled: and among those who supported this absurd doctrine, were Boerhaave and Sydenham. At the present day physicians are too well acquainted with the nature of this disease, not to interfere as soon as possible, and on dea-vours to intercept its progress, well knowing that delay only tends to insert it the more firmly on the system. They apply the bark immediately, waiting only to evacuate the stomach and bowels, and to subdue inflammatory symptoms if present, by venesection. Indeed, many prescribe the bark without even promising evacuations; and such a course is not entirely destitute of success—but the prevalent opinion of practitioners is, that the elementary canal should first be evacuated by emetics or purgatives, or if necessary by both; and for this purpose tartar emetic and calomel are generally used.





Of late the preference has been given to purgatives, but these are many cases, in which emetics are indispensable. They act not only as mere evacuants, but also operate by making a powerful impression on the stomach, which has the effect of breaking down the train of morbid association, on which depends the regular return of this periodical disease. It is from this mode of action, that active vomiting every morning is so signally successful in the cure of intermittents, and especially those of long standing.

It has been the custom of some practitioners to withhold the use of the bark, until just before the commencement of the anticipated paroxysm. Dr. Cullen was of this opinion, and thus appears to be some ground for such belief; for they contended that the bark was then given so as to make the greatest impression on the stomach at the very point of time when the fit was about to occur. And this is further supported by the fact, that cinchon given just before the return of the paroxysm acts with greater certainty, than when given so long previous to its recurrence, that the impression may be worn off. To this we can reply, that opium being a diffusible stimulant, operates much more speedily than bark, and hence ex-

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greater length of time is demanded between the administration of the latter, and the time at which its highest degree of action is wanted.

Some writers on the subject have ventured even further than Cullen, and affirmed that the bark should be given during the whole of the disease. This certainly is erroneous; the bark never fails to aggravate the disease if given while the febrile symptoms are present: and Professor Chapman tells us, that he always found it injurious even when prescribed near the accession of the fit.

Robertson on the other hand insists, that the proper time for the administration of the bark is at the most remote period possible from the commencement of the next expected paroxysm. This practice therefore was to exhibit it in large and frequent doses in the commencement of the apyrexia, instead of the dose; and according to his own account was signally successful.

Bark has been condemned on account of its being supposed to induce visceral obstructions, which not infrequently accompany intermittent fever. But the ablest practitioners do not hesitate to employ the bark even where such obstructions

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tions exist, provided they are not attended with inflammatory action. This appears to be the point to which our attention should be solely directed; and where we do not find the inflammatory diathesis connected with such cases, we may with the greatest safety and advantage prescribe the back. But on the contrary, where there is pain in the side, an active pulse, and other symptoms indicating inflammation, the back is to be avoided, as highly pernicious; while the lancet, if called for by the activity of the pulse, and violence of the pain, is to be employed. Blister and a slight salivation moreover, are generally sufficient to remove these obstructions.

It is now then supposed that the inflammation in the system arising "from the cause" is to be removed, and the inflammation removed: but this is a necessary measure. There is no more favorable circumstance of having had inflammation in the system, and independent of it, so to effect a cure - just as insufficient blood letting, in Pleurisy, will leave the violent subject to relapse in the side; and it is in this way that a considerable number of cases lose their resolution, for reason of a most



which is administered there.

As to the form in which the bark is given, in colds it was  
to be in the form of infusion, or solution, but it is most common  
in a mucilaginous substance: between the various textures of the vehicle,  
none can be here selected, and to them  
forming, we are to have recourse to another form. It may be given  
in a solution, infusion and decoction: and to make it more agree-  
able, some or most a mucilage, or as orange peel, cinnamon,  
citrus, &c. should not imperceptibly, usually before being rejected,  
show their sign it could not be retained. In cases of extreme irrita-  
tion of the stomach, it has been advised to give it in the form of  
oleum, and for this purpose it is entangled with some mucilage  
with the addition of a little Laudanum. Cataplasms of bark,  
also, the earth made with oil, is in vogue, and what is called the bark  
pocket, have all been recommended, and the latter would be useful  
in the case of children, yet these are now generally thought to be in-  
sufficiently strong.

to the bark should induce costiveness, which is sometimes the case, & few grains of rhubarb may be added to each dose; if it should

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merely a few drops of Castoreum with view the effect of per-  
nit it soon remains little short. Milk and Liquorice are the best  
articles to disguise the taste of the bark.

It has been recently ascertained that the bark contains an  
alkaline base, in which is active enters quinine. That obtained  
from the yellow bark has the name of quinine, that from the pale, cin-  
chonine, and both of these are found in the red.

When sulphuric acid is added to the base called quinine it  
forms a neutral salt, which in the dose of about  $\text{gr}$  repeated as oc-  
casion may require, is very effectual in the cure of intermittents.  
It is given during the apyrexia in the form of pills or solution in  
cinnamon water, to which a few drops of sulphuric acid may  
be added, to render the solution more complete. This is found to  
be a valuable preparation, having all the virtues of the bark, and  
the dose being small, it will be retained on the stomach, and not  
uncommonly effect cures when all other remedies are rejected. But  
I regret that it has been the misfortune of this article, like many  
others to be adulterated, which might be expected from the very high  
price at which it is vendd.

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In using this article, there is a residue of a thick, brown, viscid substance, that after a short time becomes solid, and affords a resinous appearance. This article during the present season has been much employed in the city and neighbourhood of Philadelphia in the cure of agues, and appears to be no less efficacious than the sulphate of quinine. One or two grains may be given in the form of pill every hour or two hours during the interval until quinine is taken, which is generally sufficient to arrest the fever.

From what has been now said of the Peruvian bark in the cure of this disease, I need only observe, that cases will occur in which it will fail after being tried in every form; but where the system is properly prepared for it, and we are careful to abate it during a complete intermission, we shall frequently be gratified at witnessing a speedy cure.

The *Cornus Florida*, or Dogwood has been ably investigated by Dr. Walker of Virginia; and an analysis appears to present results similar to those of the Peruvian bark. It is a tonic of very considerable efficacy, and from the reports of those who have

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have tried it in this disease, we may safely conclude that its employment in the treatment of agues is attended with frequent success. It is thought to be rather more stimulating than the Peruvian bark, but there is a very great resemblance in their effects on the system, when given in the same way and in similar doses.

The bark of the *Prunus Virginiana*, a wild cherry tree is esteemed as an useful article, and probably its virtues may be essentially active in the cure of intermittents, but I would rather employ it in other diseases, to which I think it better suited. It is exhibited in the form of substance, tincture, decoction and infusion, in doses rather larger than the Peruvian bark.

Several different species of oak have been recommended, and may occasionally be serviceable. I have no doubt little however, is known upon this subject, and for want of experience I can say nothing of their supposed virtues.

The *Angustura* bark, given in smaller doses than the Peruvian, is less apt to disorder the stomach and bowels, and has been known to succeed in cases where the latter had failed. It is highly aromatic and astringent, and is well adapted to those cases of

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of irritable stomach and bowels, when it would be improper to prescribe the cinchona.

Besides the different kinds of bark which I have mentioned there are several others which I shall suggest, particularly upon of them are indigenous, and may be resorted to in cases of emergency. These are the *Pinos verticillatus*, *Liriodendron tulipifera*, *Swietenia Tobacifera*, *Cinchona aculeata*, *Cinchona Samalcensis*, and almost every species of the willow, (*Salix*.)

As to the real value of many of these, I have nothing to say, but they have all been recommended, and some of them by such authority, that we can not hesitate to believe they are endowed with anti-intermittent powers. From the experiments which Dr. Rogers made with the *Liriodendron tulipifera*, we are taught that it is a powerful stimulant, and useful tonic. Dr. Rush and Dr. Baile thought it displayed very valuable powers, when given for the cure of agues. Professor Chapman says every species of the willow is endowed with tonic virtues, and the experiments which he instituted in the Museum convinced him that the common willow was decidedly useful in this disease.

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Among the many vegetables which our own country furnishes for the cure of ague, is the *Aristolochia serpentaria*, or virginian snake root. This is said to be sent to the peruvian bark in point of efficacy, and is much employed in combination with this article; very often accomplishing cures where the bark alone has failed. It is an agreeable aromatic, and pleasant tonic, seldom offends the stomach, and for this reason may be given in all cases where irritability of this organ accompanies the disease. It is a matter of some doubt whether this article is really competent by itself to cure intermittent; but when given in combination with other articles, its powers are highly acknowledged. Sydenham gave it conjoined with wine, in order to prevent the recurrence of the paroxysm, and not without success. The following formula is in great repute among the practitioners of this country.

Rp. Cort. Peruv. - ℥ss.

Rad. serpent. - ℥j.

Soda carb. vel Potassa carb. q. ℥i. m. div. in pulvis  
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I have never seen it used, is I have no doubt a valuable prescription, and most practitioners are prepared to bear testimony of its powers in arresting some of the most intractable cases of our frequent epidemic.

The next article is the *Eupatorium Profoliatum*. This I have already spoken of in the treatment during the paroxysm - but it is an article capable of fulfilling different indications according to the manner of its exhibition. Thus, in the paroxysm we gave it in warm decoction or infusion, for the purpose of exciting diaphoresis; but in the interval, where it is no less efficacious, in order to procure its tonic powers, we employ it in powder, or cold decoction.

The *Eupatorium Succifolium*, a plant growing in most of the middle states, is used with advantage, though it is less powerful than the preceding species.

The *Sabbatia Angularis*, centaury is also used as a tonic in this disease, and is thought not inferior to the chionanthum of Europe. It has like some other articles, the advantage over Peruvian bark of being admissible in every stage of the disease.

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Most bitters have been found more or less useful as a substitute in the bark, and may occasionally be employed in mild cases with benefit. Those most commonly preferred are Quassia and Columba in decoction or infusion.

A variety of astringents have been employed, some of which are highly useful. Those most frequently prescribed, are Gum Kino, Gum, Galls, and Sacch: Saturni. The first of these which is the kino, and which is thought the most effectual, was first made use of by Dr. Sutherland in intermittents, and found to be successful after the bark had failed. Professor Chapman considers it a useful article in the following formula.

R<sup>x</sup> Gum Kino ℥ij.

Rac. Gent. ℥ss.

Gum opii ℥ij m. div. in aqua ℥ij one

to be taken every two hours during the intervals.

It is but a short time since charcoal has been very strongly recommended by Dr. Colver, and from the experience of many able practitioners of the city of Philadelphia we are led to conclude its powers are not slender in curing intermit-  
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tent, and especially those blended with dysentery. It is in this latter case that the charcoal has been signally useful in the Philadelphia Almshouse. The dose is  $\mathfrak{zj}$ . repeated every hour or two hours during the intermission.

Sulphur is a remedy of some efficacy in intermittents, and is now much employed by the poor. It is given in the dose of about  $\mathfrak{zj}$ .

The Sulphate of Copper, or Blue vitriol has been found to arrest some obstinate cases of ague. Dr. Monroe gave it according to the following formula.  $\mathcal{R}$ . Sulph. Cupr.  $\mathfrak{q}\mathfrak{i}$ .

Ext. of Cinchon  $\mathfrak{q}\mathfrak{i}$ .  $\mathfrak{xxx}\mathfrak{ij}$ . m. diss. in pilul.  $\mathfrak{xij}$ . one to be taken every three or four hours.

The Prussiate of Iron has recently been much spoken of by Dr. Zollieffer of Maryland, as a remedy in this disease: and from the highly respectable character of this gentleman, we are induced to suppose his reports are not altogether unfounded. The dose is from 4 to 8 grains given twice or thrice a day, without any regard to the paroxysm.

Arsenic like most active medicines has been employed





ployed in the cure of intermittents: and in this employment it has its advocates who have extolled it highly, while others have condemned it not only as a sceler, but even a dangerous remedy. That it is an article productive of mischief when injudiciously employed, no one will pretend to deny; for it may be set down as a maxim, that any medicine which will, not do mischief, when improperly exhibited, is very little worth. But arsenic when properly administered, is as safe, and equal, if not superior to all other remedies in arresting the course of intermittents.

I have seen it employed, more than any other article, and with such success, that I have become exceedingly attached to it in the cure of this disease. It is the practice of most physicians who prescribe it, to employ it in the form of Fowler's Solution, a preparation which I consider very inefficient for this purpose, although it is occasionally productive of advantage. the best mode of exhibiting this active and powerful medicine is in the form of pill, in the dose of about  $\frac{1}{2}$  or  $\frac{3}{4}$  of a grain of the white oxide three times a day. My worthy preceptor  
on



Dr. Darlington is in the habit of using the following prescription, that he received from the late Dr. Vaughan of Wilmington, and with such success that during the course of twenty years practice he has never met a single case in which it failed. The formula is as follows.

R. Sal. Ammon. ℥i.

Gum. Opii - q. s. xij.

White oxide of arsen. gr. xij. m. ft. pilul. ℥iiss.

me to be given three times a day to an adult.

If the habitual complaint of sickness at stomach it will be proper to administer an emetic previous to taking the arsenic, otherwise, no preparatory treatment is necessary. The pills as above directed are to be continued untill the paroxysms are subdued, which is generally the case on the second or third day; after which it is requisite to administer barks for a few days that the tone of the system may be improved, and a recurrence prevented. By this treatment the paroxysms are more quickly and permanently subdued, than when treated by the bark alone, or any other remedy with which I am acquainted.

It may be proper to remark that by employing the arsenic



in this way, there is no reason to apprehend any injury from it. It occasionally there is a slight swelling of some part of the body, as the ankles and feet; but even this rarely occurs, and when it does, is no inconvenience to the patient, and quickly subsides. Whether stramonium, as it is said, has the power of obviating its injurious effects spoken of by authors, I will not attempt to decide positively, but I am inclined to think it highly probable that such is the case. Neither am I aware that the sal ammoniac is in any way serviceable, further, than by using it as an ingredient, the stramonium is more completely reduced to powder, and an equal distribution of the aconite through the mass is more effectually obtained, which is essentially important. In deed the foregoing formula seems to be, as Dr. Chapman has remarked of the Sovereign Powder, one of those lucky hits in the combination of medicines, which cannot be improved.

By proportioning the dose accordingly it may be given to patients of any age; and on account of the dose being extremely small, and capable of concealment in any substance; it is remarkably well suited to children, who cannot be prevailed

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upon to take the bark in sufficient quantity to arrest the disease.

*Sela Araneæ.* The web of the black spider, which inhabits cellars, barns, and stables, is recommended, on the cure of agues by several authors, and particularly by Dr R Jackson of the British army. He thinks it more effectual in preventing the recurrence of the febrile paroxysms, than either bark, or a tonic, or any other remedy employed for that purpose. He further says that if the cobweb was given to a subject prepared by bleeding, emetics, or purgatives, it seldom failed to effect a cure comparatively permanent; and it was a rare occurrence for the disease thus suspended to relapse into another form. If given in the time of perfect intermission the return of the paroxysm was prevented; if given under the first symptoms of a commencing paroxysm, the symptoms were subdued, and the course of the paroxysm was so much interrupted, that the disease for its most part lost its characteristic symptoms. If given after the paroxysm had advanced in progress, the symptoms of irritation, viz, tremors, startings, spasms, and delirium - if such existed as forms of febrile action, were usually reduced in violence.

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lence, sometimes entirely removed."

Dr. Jackson is high authority; and from his representation of the article we are induced to believe that it is not without valuable power in the treatment of intermittent. It has also been tried by several of the most distinguished practitioners of Philadelphia, and ascertained to possess very active virtues, particularly in the cure of this disease, where they have employed it with such success, as to be perfectly satisfied that the reports of Dr. Jackson are but very little if at all exaggerated. The dose is 4 or 5 grains repeated every fourth or fifth hour—

I come now to speak of those articles which are employed with a view of obviating the recurrence of a paroxysm; and most of these I have already mentioned. I have said opium was recommended in the cold fit, and used with very great advantage: I may here observe that it is no less useful if given just before the commencement of it, so as to make the greatest impression on the system at the very time when the paroxysm was expected. Dr. Trotter speaks in high terms of this  
 pre-



practice, which, according to his account, never failed to give relief. At present, we see a continuation of spirits, with a much milder and more moderate, as the former, cheerful countenance, and a flushed cheeks. The pulse which was weak and sometimes irregular, becomes less frequent, full, and equal, in a gentle warmth is diffused over the whole frame, and every unpleasant feeling banished.

Emetics have now been given just before the accession of the fit, and we have sufficient evidence of their signal utility in such cases. They produce a powerful impression on the stomach, which tends to relax the surface, and excite diaphoresis, as mentioned on a former occasion.

Blisters have been said to prevent the recurrence of the hæmorrhage when applied so long before its accession, as to make the greatest impression at the time of the anticipated attack.

*Strophanthus* either given in the dose of about a drachm, has been found useful when prescribed under the same circumstances as opium. It is a powerful and diffusible stimulant, and in all probability is a more active agent in preserving the solid stage of fever. Indeed any strong impression made either on the mind or body,



body seems to have the effect of preventing a recurrence of a paroxysm of this disease. Those which are known to act sufficiently powerfully on the former to subvert the fit, are, however, superstitious fear, &c.

After the usual remedies have failed Mercury may be tried, and to prove useful it is necessary to induce a slight salivation, which should be kept up for several weeks.

After <sup>the</sup> employment of all these remedies which I have enumerated, and many others which might be added, it will occasionally be the misfortune of those engaged in the practice of their profession to witness cases which remain inextinguishable, and will in spite of all our efforts degenerate into diseases of a more serious character. Intermittents change into continued fevers, and sometimes assume a typhus form; but they generally degenerate into obstructions of the abdominal viscera, and their ordinary consequences, as jaundice and dropsy. And it is from these circumstances, that we are taught their injurious nature, although much has been said of their salutary influence. The doctrine of Boerhaave was no less dangerous than erroneous; for many acquiescing in this opinion were induced to refrain from <sup>phlog</sup>

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plying their remedies in the early stage of the disease, which only had the effect of strengthening the morbid habit, and implanting the disease or its attendants so firmly on the system, that to attempt their removal, was only to expose the inefficacy of our art.

In concluding what I have to say on intermittents, I need only add, that those who wish to be successful in exterminating the morbid association upon which the existence of this disease depends, must attack it in the very onset, and with such remedies as are calculated to make a powerful impression on the system, and in almost every case we shall be gratified at seeing our patient convalescent, and our own exertions applauded.

*Fini.*

